What is claimed is:

1. A method for diagnosing breast cancer in a subject, comprising detecting expression of mammary gland sodium/iodide symporter (mgNIS) in breast tissue of the subject.

2. The method of Claim 1, wherein the expression of mgNIS is detected *in vitro* or *in vivo*.

3. The method of Claim 1, wherein the expression of mgNIS is detected using an agent reactive with mgNIS.

4. The method of Claim 3, wherein the agent is labeled with a detectable marker.

5. The method of Claim 3, wherein the agent is an antibody.

6. The method of Claim 5, wherein the antibody is labeled with a detectable marker.

7. The method of Claim 1, wherein the expression of mgNIS is detected using at least one nucleic acid probe which hybridizes to nucleic acid encoding mgNIS.

8. The method of Claim 7, wherein the nucleic acid probe is DNA or RNA.

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9. The method of Claim 7, wherein the nucleic acid probe is labeled with a detectable marker.

10. The method of Claim 1, wherein the expression of mgNIS is detected using a detectable agent that is selectively taken up by mgNIS.

11. The method of Claim 10, wherein the detectable agent is radioiodide or ^{99m}Tc-pertechnetate.

12. A method for treating breast cancer in a subject, comprising the steps of:

a) diagnosing breast cancer in the subject by detecting expression of mgNIS in breast tissue of the subject; and

b) treating the breast cancer diagnosed in the subject.

13. The method of Claim 12, wherein the breast cancer is treated by surgery, radiotherapy, hormone therapy, and/or chemotherapy.

14. The method of Claim 12, wherein the breast cancer is treated by administering to the subject an anti-cancer agent that is selectively taken up by mgNIS.

15. The method of Claim 14, wherein the anti-cancer agent is radioiodide.

16. The method of Claim 12, wherein the breast cancer is treated by administering to the subject an anti-cancer agent that is reactive with mgNIS.

17. The method of Claim 16, wherein the anti-cancer agent is an antibody bound to a chemotherapeutic cytotoxin.

18. A method for assessing the efficacy of breast cancer therapy in a subject who has undergone or is undergoing treatment for breast cancer, comprising determining whether mgNIS is expressed in breast tissue of the subject, wherein an absence of mgNIS expression is indicative of successful breast cancer therapy.

19. The method of Claim 18, wherein the expression of mgNIS is determined *in vitro* or *in vivo*.

20. The method of Claim 18, wherein the expression of mgNIS is deteremined using an agent reactive with mgNIS.

21. The method of Claim 20, wherein the agent is labeled with a detectable marker.

22. The method of Claim 20 wherein the agent is an antibody.

23. The method of Claim 22, wherein the antibody is labeled with a detectable marker.

24. The method of Claim 18, wherein the expression of mgNIS is determined using at least one nucleic acid probe which hybridizes to nucleic acid encoding mgNIS.

25. The method of Claim 24, wherein the nucleic acid probe is DNA or RNA.

26. The method of Claim 24, wherein the nucleic acid probe is labeled with a detectable marker.

27. The method of Claim 18, wherein the expression of mgNIS is determined using a detectable agent that is selectively taken up by mgNIS.

28. The method of Claim 27, wherein the detectable agent is radioiodide or ^{99m}Tc-pertechnetate.